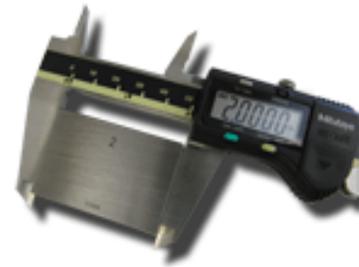


Metrology Musings

By [Robert Lutz](#), AASHTO re:source Manager
Posted: April 2010

I think about metrology a lot. We all do, whether we realize it or not. Metrology is defined as "the field of knowledge concerned with measurement." Who doesn't think about and use measurements on a daily, sometimes hourly, basis? What time is it? How hot or cold is it outside? How much do I weigh today? What's my blood pressure? My cholesterol level? Your kids might ask, repeatedly, "How many more miles until we're there?" You may have even inquired, "How fast was I going, Officer?" It goes on and on. Measurements are also the focus of the laboratory testing business. What is the compressive strength of a specimen, its mass, or its density? We not only make and use measurements all the time, but we also trust them, almost implicitly. The one question that I will continue to investigate in these articles is this: should we trust these measurements?



Over the course of time I'll explore metrology topics such as calibration, traceability, uncertainty, and measurement standards. As we investigate and unravel some of these metrology mysteries we will determine what makes a good measurement - one that we can trust. We will think together and learn which questions to ask about our measurements. However, with this inaugural article about metrology, I'll keep it simple and fun by providing some interesting facts about metrology history.

The instruments we use today and the measurements we make are very sophisticated. That wasn't always the case, but you might be surprised to learn just how creative our earliest ancestors were. Weights and measures were among the earliest tools invented. Humans looked around and used those things that were convenient and available, such as fingers, hands, and forearms for measuring length. (How would you have created the first measurement system?) The yard as a measure of length can be traced back to early Saxon kings, who wore girdles around their waists - again, a convenient and available measuring device. The word "yard" comes from the Saxon word "gird" meaning the circumference of a person's waist. Early humans used plant seeds to measure volume and, as scales were developed, used seeds and stones as mass standards.

The carob tree is a member of the legume family. Carob pods contain four series of oval holes, each bearing a seed like a watermelon seed. What does this have to do with metrology? Did you know that the "carat" - still used today as a mass unit for gems - was derived from the carob seed? The carob seed was found to be a good unit of weight because any given carob seed weighs, for all practical purposes, the same as any other carob seed. In time, the carob seed became the standard unit of weight for gems.

That's the end of our brief metrology history lesson. I'll tell you more about other fascinating facts in future articles. So, the next time you are in a jewelry store, ask to see a 1-carob seed ring.